ABSTRACT OF THE DISCLOSURE

A process for producing a fuel gas for a fuel cell is provided. The process includes a step of converting hydrocarbons and/or oxygen-containing hydrocarbons to a reformed gas which is composed principally of hydrogen by an autothermal reforming reaction using an autothermal reforming catalyst. The catalyst includes ruthenium supported on a support containing 5 to 40 percent by mass of a cerium oxide or rare earth element oxide which is composed principally of a cerium oxide, 60 to 95 percent by mass of an aluminum oxide, and 0 to 10 percent by mass in terms of metal of one or more elements selected from the group consisting of an alkaline metal and an alkaline earth metal, the atomic ratio of cerium and rhodium (Ce/Rh) being 1 to 250.